Case Report
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Bicuspidisation: Two is Better than None - A Case Report

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ABSTRACT

A periodontally compromised tooth with severe furcation involvement may as well be retained of their roots rather than its removal in toto. Bicuspidisation (Premolarisation) is a surgical technique of sectioning mandibular molar roots with their respective crown portions followed by rehabilitation with fixed prosthesis in the individual segments. This not only eliminates furcation involvement but also facilitates effective oral hygiene maintenance. The present case report demonstrates the successful management of grade III furcation involved mandibular molar by bicuspidisation followed by subsequent prosthodontic rehabilitation. It gives a better alternative to salvage a periodontally compromised tooth rather than opting for extraction.

Keywords: Bicuspidisation; furcation defects; hemisection; mandibular molar.

INTRODUCTION

Recent developments in dentistry and increased patient preference have led to treatment of compromised teeth which would otherwise be extracted.[1] Treatment modalities involve interdisciplinary approach. Several procedures proposed for management of furcation involvement (FI) are: root amputation, bicuspidisation, hemisection, radisection.[2] Bicuspidisation refers to sectioning of mandibular molars, leaving two separate roots intact that are then treated as bicuspids. Various resection procedures should be considered before every molar extraction,[3] as it can provide a comparatively simple, conservative, and affordable treatment alternative with long-term clinical success. This article describes successful management of grade-III FI mandibular molar by bicuspidisation followed by prosthodontic rehabilitation.

CASE REPORT

A 37-year-old male reported to Department of Periodontology and Oral Implantology, Gandaki Medical College, Pokhara, Kaski, Nepal with chief complaint of dull aching pain in lower left back tooth region for three days. On intraoral examination, patient had fair oral hygiene and lower left mandibular molar (36) was associated with periodontal abscess, probing pocket depth 5 mm, Grade III furcation involvement with no mobility or tenderness on percussion. The patient had undergone root canal treatment of the same tooth eight months back.

Radiographic evaluation revealed radiolucency in furcation area with slight interproximal bone loss (Figure 1). The bony support of both the roots was adequate. Periodontal prognosis with respect to 36 was good and was diagnosed as generalised chronic gingivitis with localised chronic periodontitis with respect to 36. On the same day, oral prophylaxis was done followed by abscess drainage under local anaesthesia. Intraoral examination after two weeks revealed uneventful gingival healing. However, soft tissue recession with exposure of the furcation entrance was evident. The patient was repeatedly requesting to extract the tooth. On properly explaining about the importance of retaining tooth and treatment options like tunnelling, bicuspidisation with open flap debridement, patient was convinced for the bicuspidisation followed by prosthodontic rehabilitation. Under adequate local anaesthesia, crevicular incision was made from first premolar to second molar region. On reflection of full thickness mucoperiosteal flap, bony defect was localised and curettage and debridement were done. A long tapered-fissure carbide bur was used to make vertical cut buccolingually from the occlusal surface towards the furcation area to section the entire tooth into two halves (Figure 2). A periodontal probe was used to ensure the complete sectioning of tooth. A diamond-coated tip was used to smoothen and contour the furcation area of both halves. After thorough irrigation, flap was repositioned and sling sutures were placed with 3-0 silk. Patient was instructed

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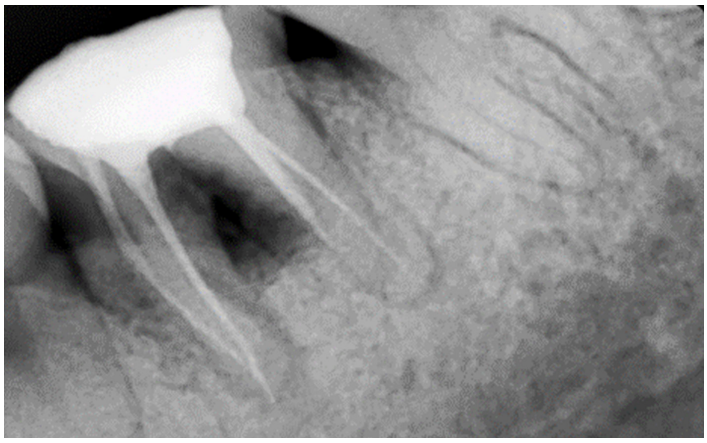

Figure 1: Intraoral periapical radiograph showing radiolucency in the furcation area of 36.

Figure 2: Intraoperative picture showing the bisected halves.

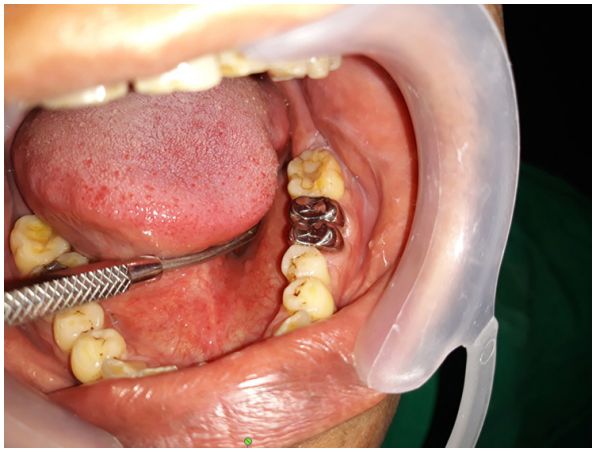

Figure 3: Showing both halves with full metal crown.

Figure 4: Bone level after six months.

to avoid chewing from the treatment side and advised for proper oral hygiene maintenance. They were informed mild discomfort and swelling might take place. The sutures were removed after seven days. At one-month recall, the healing was satisfactory with no mobility of both the segments. Tooth preparation of both halves were done; impressions were made with elastomeric impression material and the cast was poured. Full-metal crown (Figure 3), as per the patients' preference, was fabricated for both the segments and cemented with glass ionomer cement. Post-cementation instructions were given and patient was periodically recalled to ensure proper healing. On examining after six months, there was uneventual healing with good maintenance. (Figure 4).

DISCUSSION

The management of deep pocket in posterior teeth with furcation involvement, most often poses a challenge. Non-surgical management alone is less likely to eliminate the plaque and plaque retentive factors completely due to inadequate accessibility and the anatomically complex furcation area.[4] Various surgical procedures proposed for the treatment of furcation involved tooth are tunnelling, hemisection, bicuspidisation, root resection, etc. The appropriate selection of treatment procedure largely depends on amount of bone loss, angulation and position of tooth in the arch, length, divergence and curvature of roots and feasibility of endodontic management, and patients' oral hygiene maintenance.

In this case, radiographic and clinical parameters (adequate root separation, moderate amount of bone loss around individual roots) were satisfactory, hence, bicuspidisation technique seemed to be the most viable option. The mandibular molar was vertically sectioned through the furcation, retaining both halves which were then treated as bicuspids. This separation tends to successfully reduce/eliminate plaque retentive (furcation) area, facilitate effective oral hygiene maintenance and prevent further attachment loss. During the treatment, occlusal contacts were repositioned in a more favourable position. Lateral forces were reduced by decreasing the cuspal inclines and eliminating the non-working contacts. A similar study by Dalvi et al.[5] showed a successful result after bicuspidisation

of left first mandibular molar followed by bone graft and platelet rich fibrin membrane and subsequent prosthetic treatment. Farshchian and Kaiser have reported the success of a molar bisection with subsequent bicuspidisation.[6] Its success depends on: i) Stability/adequate bone support of individual tooth sections; ii) Absence of severe root flutings; iii) Adequate separation of the roots, to create an acceptable embrasure for effective oral hygiene.

Basten et al. (1996)[7] have reported that furcation involved tooth can be retained for longer time with appropriate treatment strategies and adequate oral hygiene regimes. The advantage of root resection is retention of some or the entire tooth.[8] It may be performed on endodontically treated teeth or vital teeth.[9] However, the failure of endodontic therapy can eventually cause failure of the procedure. Hence, to avoid subsequent unfavourable event, it is advisable to have endodontic therapy completed before resection. Buhler[10] observed 32% failure rate in root resection cases and the main aetiology being endodontic pathology, root fracture and not the periodontal complications. In this case, six months follow up showed a good prognosis with healthy periodontal status and absence of mobility. Hence, with appropriate case selection, root canal treatment followed by bicuspidisation can be a good, absolute and biological cost saving option with good chances of success.

SUMMARY

With recent advancements in dentistry, bicuspidisation has received good acceptance as a conservative and reliable dental treatment. Hence, it may be an apt alternative to extraction and should be well discussed with the patients during consideration of treatment options.

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Conflict of Interest: None.

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